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Agriculture

Forest
Service

Alaska Region
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Reply to: 3430

Date: September 13, 1993

Subject: Forest Health Survey/ Unit 9

To: Forest Supervisor, Chugach National Forest

Chugach National Forest Timber Staff personnel requested a biological evaluation of the forest health situation, specifically spruce bark beetle activity, of the treated spruce stand located in Unit 9, directly across the highway from the entrance to the Russian River Campground.

Forest Health Management personnel carried out the biological evaluation on July 29. Four, 1 x 10 chain (1 acre) strip cruises were randomly located within the thinned, and pruned spruce stand located within Unit 9. An additional 1 x 10 chain strip cruise was randomly located within an untreated portion of the same spruce stand, due east of the treated area, to serve as a check. One additional check strip cruise was undertaken within an untreated spruce stand across the highway from Unit 9. Thus, there were a total of six, 1 x 10 chain strip cruises; 4 within the treated stand, and 2 within untreated stands. All spruce, greater than 2" in diameter, were tallied within each strip cruise. The following information was recorded for each spruce: diameter at breast height and tree condition. Six tree condition classes were used: (1) unattacked, green, (2) successfully attacked in 1993, (3) successfully attacked in 1992, (4) successfully attacked prior to 1992, (5) unsuccessfully attacked (e.g., a pitch-out), and (6) dead from other causes.

The following three tables present the results of the 6 strip cruises:

TABLE 1. Stand condition of treated (pruned/thinned) portion of Unit 9 (based on 4 strip cruises; numbers are on a per acre basis).

DBH	# UNATT	1993 ATTACK	1992 ATTACK	>1992 ATTACK	# PITCH-OUT	# DEAD-OTHER
2-3.9	39	0.00	0.00	0.00	0.00	0.25
4-5.9	87	0.25	0.25	0.25	0.00	1.00
6-7.9	56	1.25	0.00	0.00	0.75	0.50
8-9.9	20	1.00	0.25	0.00	0.50	0.00
10-11.9	6	0.00	0.00	0.25	0.00	0.00

12-13.9	1	0.00	0.00	0.00	0.00	0.00
14-15.9	.5	0.00	0.00	0.00	0.00	0.00
16-17.9	0	0.00	0.00	0.00	0.00	0.00
> 18	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
	209.5	2.5	0.50	0.50	1.25	1.25

TABLE 2. Stand condition of untreated portion of Unit 9 (based on 1 strip cruise; numbers are on a per acre basis).

DBH	# UNATT	1993 ATTACK	1992 ATTACK	>1992 ATTACK	# PITCH-OUT	# DEAD-OTHER
2-3.9	75	0.00	0.00	0.00	0.00	0.00
4-5.9	75	0.00	0.00	0.00	0.00	5.00
6-7.9	58	0.00	0.00	0.00	2.00	0.00
8-9.9	10	0.00	2.00	0.00	0.00	0.00
10-11.9	0	0.00	0.00	0.00	0.00	0.00
12-13.9	2	0.00	0.00	0.00	0.00	0.00
14-15.9	0	0.00	0.00	0.00	0.00	0.00
16-17.9	0	0.00	0.00	0.00	0.00	0.00
> 18	<u>0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
	220	0.00	2.00	0.00	2.00	5.00

TABLE 3. Stand condition of untreated stand across the highway from Unit 9 (based on 1 strip cruise; numbers are on a per acre basis).

DBH	# UNATT	1993 ATTACK	1992 ATTACK	>1992 ATTACK	# PITCH-OUT	# DEAD-OTHER
2-3.9	19	0.00	0.00	0.00	0.00	0.00
4-5.9	44	0.00	0.00	1.00	0.00	0.00
6-7.9	94	0.00	0.00	1.00	0.00	0.00
8-9.9	56	0.00	0.00	2.00	0.00	0.00
10-11.9	48	0.00	0.00	1.00	0.00	0.00
12-13.9	29	0.00	0.00	1.00	0.00	0.00
14-15.9	9	0.00	0.00	0.00	0.00	0.00
16-17.9	0	0.00	0.00	0.00	0.00	0.00
> 18	<u>1</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
	300	0.00	0.00	6.00	0.00	0.00

Results of the strip cruises indicate very little current spruce beetle activity, either in the treated or the untreated check stands. There were only three 1993 current attacks out of more than 700 surveyed trees. There are small pockets (3-5 trees) of black spruce mortality in the treated (thinned and pruned) stand. This mortality maybe a result of slash burning which either impacted the root zone or the stems of the black spruce resulting in mortality. Dead trees were inhabited by secondary bark beetles; spruce beetles, however, were not present.

Approximately 30% of the spruce in the treated stand had numerous vertical bole wounds associated with copious resin flow, as if the bark had just cracked. This damage was not apparent in the unthinned stands. This wounding may be a result of the thinning which allowed more light to strike tree boles producing sun scald. Regardless of the causal agent, these wounds may serve as entrance courts for insects and pathogens.

In summary, there is very little spruce beetle activity in either the thinned or unthinned stands; a reflection, no doubt, of the low level of current spruce beetle activity in the general Russian River area. However, in the long run, the treated (thinned and pruned) stands will be much more resistant to future spruce beetle attacks than the surrounding untreated stands. Neighboring untreated high value stands should come under management such as thinning and pruning. However, both techniques should be undertaken after spruce beetle flight, preferably in the fall. Such timing allows the residual stand to "harden-off" before the next beetle flight.

/s/ Jerry Boughton
for
EDWARD HOLSTEN
Forest Entomologist

cc:
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